

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Leo Mathew et al. Group Art Unit:
 Application No.: Unassigned Examiner: Unassigned
 Date Filed:
 Title: INTEGRATED CIRCUIT HAVING MULTIPLE MEMORY TYPES AND
 METHOD OF FORMATION

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner For Patents
 Alexandria, VA 22313

SIR:

In accordance with 37 C.F.R. §1.56 and in compliance with 37 C.F.R. §§1.97 and 1.98, the references listed on attached Form PTO/SB/08 and/or subsequently identified herein, are for consideration by the United States Patent and Trademark Office. Pursuant to the Office waiving the requirement under 37 CFR 1.98 (a)(2)(i) for submitting a copy of each cited U.S. patent and each U.S. patent application publication for all U.S. national patent applications filed after June 30, 2003 and for all international applications that have entered the national stage under 35 USC §371 after June 30, 2003, copies of the reference are not submitted herewith.

I. COPIES

- a. ☒ A legible copy of (i) each foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) all other information or that portion which caused it to be listed, is included herewith.
- b. ☐ Any patents, publications or other information which are listed on PTO/SB/08 which are not enclosed herewith were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. §120:

U.S. Serial Number

U.S. Filing Date

II. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

- a. ☒ Except as may be indicated below in (b) of this section, all of the patents, publications or other information are in the English language (concise explanation not required).
- b. ☐ A concise explanation of the relevance of all patents, publications or other information listed that is not in the English language is as follows:
- c. ☐ The following additional information is provided for the Examiner's consideration:

III. ☐ CROSS REFERENCE TO RELATED APPLICATION(S)

The Examiner is advised that the following co-pending application(s) contain(s) subject matter that may be related to the present application. By bringing this (these) applications to the Examiner's attention, Applicant(s) does(do) not waive the confidentiality provisions of 35 U.S.C. §122.

<u>Serial No.</u>	<u>Filing Date</u>	<u>Art Unit</u>
10/074,732	09-03-2002	2815
10/427,141	04-30-2003	2811
10/443,375	05-22-2003	1765
10/443,908	05-22-2003	2818

FEES

- IV. ☒ THIS IDS IS BEING FILED UNDER 37 C.F.R. §1.97(b): (check one box)
- a. ☐ within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d) (37 C.F.R. §1.97(b)(1)). No fee or statement is required.
 - b. ☐ within three months of the date of entry of the national stage as set forth in § 1.491 in an international application (37 C.F.R. §1.97(b)(2)). No fee or statement is required.
 - c. ☒ before the mailing date of a first Office Action on the merits (37 C.F.R. §1.97(b)(3)). No fee or statement is required.
 - d. ☐ before the mailing date of a first Office Action after the filing of a request for continued examination under § 1.114 (37 C.F.R. § 1.97(b)(4)). No fee or statement is required.
- V. ☐ THIS IDS IS BEING FILED UNDER 37 C.F.R. §1.97(c): (check one box)
before the mailing date of any of a Final Office Action under 37 C.F.R. §1.113, a Notice of Allowance under 37 C.F.R. §1.311, or an action that otherwise closes prosecution in the application (See 37 C.F.R. §1.97(c)).
- a. ☐ No statement; therefore, charge deposit account **502117** the fee set forth in 37 C.F.R. §1.17(p).
 - b. ☐ See the statement below. No fee is required.
- VI. ☐ THIS IDS IS BEING FILED UNDER 37 C.F.R. §1.97(d):
on or before payment of the issue fee and is accompanied by the following:
- 1) a statement under 37 C.F.R. §1.97(e) as provided below; and
 - 2) charge deposit account **502117** the petition fee set forth in §1.17(p).
- VII. ☐ STATEMENT UNDER 37 C.F.R. §1.97(e) (check only one box, if applicable)
The undersigned hereby states that
- a. ☐ each item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of IDS; or
 - b. ☐ no item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application, and to knowledge of the person signing the statement after making reasonable inquiry, no item of information contained in the IDS was known to any individual designated in 37 C.F.R. 1.56(c) more than three months prior to the filing of this statement, or
 - c. ☐ some of the items of information contained in the IDS were cited in a communication from a foreign Patent Office. As to this information, the undersigned states that each item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby states that no item of this remaining information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application or, to the knowledge of the person signing the statement after making reasonable inquiry, no item of information contained in the IDS was known to any individual designated in 37 C.F.R. 1.56(c) more than three months prior to the filing of this statement.


VIII. PAYMENT OF FEES

- ☐ A check in the amount of _____ is enclosed for the above-identified fee(s).
- ☐ Please charge Deposit Account **502117** in the amount of \$180.00 for the above-indicated fee(s).
- ☒ If Applicant has overlooked any additional fees, or if any overpayment has been made, the Commissioner is hereby authorized to credit or debit Deposit Account **502117**.
- ☐ Two Copies of this paper are attached for Deposit Account charges and debits.

The above references are being cited only in the interests of candor and without any admission that they constitute statutory prior art or contain matter which anticipates the invention or which would render the same obvious, either singly or in a combination, to a person of ordinary skill in the art.

If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. **502117**.

Respectfully submitted,
Leo Mathew et al.


Robert L. King
Attorney for Applicant(s)
Reg. No. 30,185
Tel. 512-996-6839

MOTOROLA, INC.
Customer Number 23125

Enclosures: ☒ PTO/SB/08
☒ References A-19 thru A-34
☐ Foreign Search Report
☐ Other:

Substitute for form 1449A/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	
		Filing Date	
		First Named Inventor	
		Group Art Unit	
		Examiner Name	
Sheet	1	of	3
		Attorney Docket Number	
		SC13161TP	

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number -Kind Code ² (if known)			
	A-1	US - 6,583,469	06-24-2003	Fried et al.	
	A-2	US - 2003/113970 A1	06-19-2003	Fried et al.	
	A-3	US - 6,472,258	10-29-2002	Adkisson et al.	
	A-4	US - 6,458,662	10-01-2002	Yu	
	A-5	US - 6,433,609	08-13-2002	Voldman	
	A-6	US - 6,414,356	07-02-2002	Forbes et al.	
	A-7	US - 6,413,802	07-02-2002	Hu et al.	
	A-8	US - 6,396,108	05-28-2002	Krivokapic et al.	
	A-9	US - 6,372,559	04-16-2002	Crowder et al.	
	A-10	US - 6,355,961	03-12-2002	Forbes	
	A-11	US - 6,330,184	12-11-2001	White et al.	
	A-12	US - 6,300,182	10-09-2001	Yu	
	A-13	US - 6,097,065	08-01-2000	Forbes et al.	
	A-14	US - 6,150,687	11-21-2000	Noble et al.	
	A-15	US - 6,011,725	01-04-2000	Eitan	
	A-16	US - 5,804,848	09-08-1998	Mukai	
	A-17	US - 5,689,127	11-18-1997	Chu et al.	
	A-18	US -4,859,623	08-22-1989	Busta	
		US -			
		US -			

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation, if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Substitute for form 1449A/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	
		Filing Date	
		First Named Inventor	
		Group Art Unit	
		Examiner Name	
Sheet	2	of	3
		Attorney Docket Number	SC13161TP

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴ Kind Code ² (if known)			
	A-19	DE	101 25 967 C1	05-29-2001	Schlösser et al.	
	A-20	WO	00/21118	04-13-2000	Marso et al.	

NON PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	A-21	Related Application 10/074,732 entitled "Method of Forming a Vertical Double Gate Semiconductor Device and Structure Thereof" filed September 3, 2002 entitled
	A-22	Related Application 10/443,375 entitled "Transistor With Independent Gate Structures" filed May 22, 2003
	A-23	Related Application 10/443,908 "Memory with Charge Storage Locations" entitled filed May 22, 2003
	A-24	Related Application 10/427,141 entitled "Semiconductor Fabrication Process with Asymmetrical Conductive Spacers" filed April 30, 2003
	A-25	LEE et al.; "Multilevel Vertical-Channel SONOS Nonvolatile Memory on SOI"; IEEE Electron Device Letters, 2002; pp 1-3 and 208-209.
	A-26	YU, BIN et al; "FinFET Scaling to 10nm Gate Length; IEEE IDEM 2002; pp 251-254; IEEE

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation, if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English Language Translation is attached.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Substitute for form 1449A/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	
		Filing Date	
		First Named Inventor	Leo Mathew et al.
		Group Art Unit	Unassigned
		Examiner Name	Unassigned
Sheet	3	of	3
		Attorney Docket Number	SC13161TP

NON PATENT LITERATURE DOCUMENTS (CONT.)			
Examiner Initials ¹	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	A-27	CHOI, YANG-KYU et al.; "Sub-20nm CMOS FinFET Technologies"; 2001 IEEE, 4 pp..	
	A-28	KEDZIERSKI, JAKUB et al.; "High-Performance Symmetric-Gate and CMOS-Compatible Vt Asymmetric-Gate FinFET Devices"; 2001; IEEE; 4 pp.	
	A-28	HISAMOTO, DIGH et al.; "FinFET – A Self-Aligned Double-Gate MOSFET Scalable to 20 nm"; IEEE Transactions on Electron Devices; Vol. 47, No. 12, December 2000, pp 2320-2325.	
	A-30	TANAKA, TETSU et al.; "Ultrafast Operation of V _{th} -Adjusted P ⁺⁺ n ⁺⁺ Double Gate SOI MOSFET's; IEEE Electron Device Letters, Vol 15, No. 10, October 1994; pgs 386-388.	
	A-31	CHAN et al.; "A True Single-Transistor Oxide-Nitride-Oxide EEPROM Device"; IEEE Electron Device Letters; March 1987; pp 93-95; Vol. EDL-8, No. 3.	
	A-32	GONZALEZ, FERNANDO Sr. et al.; "A Dynamic Source-Drain Extension (DSDE) MOSFET Using a Separately Biased Conductive Spacer"; pp 645-648	
	A-33	KIM, KEUNWOO et al.; "Double-Gate CMOS Symmetrical – Versus Asymmetrical-Gate Devices"; IEEE Transactions On Electron Devices, Vol 48, No. 2; February 2001; pp 294-299.	
	A-34	FOSSUM, JERRY G. et al.; "Extraordinarily High Drive currents in Asymmetrical Double-Gate MOSFETS"; Superlattices and Microstructures, Vol 28, No. 5/6, 2000, 2000 Academic Press, pp 525-530.	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation, if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English Language Translation is attached.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.